CrossPoint 450 Plus Series

Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

COMMON FEATURES

- **Inputs: Video on female BNC connectors; audio on captive screw connectors**
- **Outputs: Video on female BNC connectors; audio on captive screw connectors**
- **Ultra-wideband 450 MHz (-3 dB) RGB video bandwidth, fully loaded —** Designed for the most demanding, very high resolution computer-video rates without signal degradation. The CrossPoint 450 Plus Series provides a minimum 450 MHz (-3 dB) of RGB video bandwidth at full performance capability when one input drives all outputs.
- **Extremely flat response to 130 MHz** — Switcher performance is further enhanced by the extremely flat response in the critical portion of the bandwidth curve, between 0 and 130 MHz.
- **ADSP™ - Advanced Digital Sync Processing technology** — An exclusive, all-digital process that regenerates the sync signal waveform and restores sync level to 5.0 V p-p, TTL, specifications. This ensures a stable sync signal for improved signal compatibility with any LCD, DLP, plasma, or other digital display device.
- **DSVP™ - Digital Sync Validation Processing** — Verifies active sources by polling all inputs for valid sync signals. DSVP then transmits the horizontal and vertical sync information to the user through the serial or IP Link ports.
- **Compatible with RGBHV, RGBS, RGsB, HDTV, component video, S-video, composite video, and unbalanced/balanced stereo audio** — All models switch separate horizontal and vertical sync to ensure proper sync polarity, providing a more stable image.
- **Excellent channel to channel isolation** — The CrossPoint 450 Plus provides excellent isolation between channels and extremely low electromagnetic emissions, perfect for minimizing signal leakage in high security or government environments.
- **Buffered I/O** — Each input and output is individually buffered to provide maximum performance and virtually no crosstalk or signal interference between channels.
- **Triple-Action Switching™ for RGB Delay** — Blanks the screen when switching to a new source. The new sync signals precede the RGB signals, so there is no glitch shown during the transition. The time delay between the RGB and sync signals is adjustable up to five seconds through front panel, IP Link, or serial control.
- **HVA models switch both balanced and unbalanced stereo audio**
- **Audio input gain and attenuation** — Allows users to set the level of gain or attenuation for each audio input channel, eliminating noticeable volume differences when switching between sources.
- **Audio output volume adjustment and muting** — Can be set dynamically for each channel through the front panel or serial control, eliminating the need for an audio preamplifier in many system designs.
- **Audio breakaway** — Provides the capability to break an audio signal away from its corresponding video signal, allowing the audio and video signals from one source to be switched to different destinations.
- **View I/O mode** — Users can easily view which inputs and outputs are actively connected.
- **I/O grouping** — Allows the matrix switcher to be virtually divided into smaller sub-switchers, making installation and control easier. I/O grouping allows specific outputs, like those designated for a specific video format, to be grouped together.
- **Rooming** — All models can be programmed to group selected outputs into specific "rooms," each with its own set of unique presets. Each room can support up to 16 outputs. A total of 10 rooms, with 10 presets per room, are available.
- **Global presets** — Frequently used I/O configurations may be saved and recalled either from the front panel, IP Link, or serial control. This time-saving feature allows I/O configurations to be set up and stored in memory for future use.
- **QS-FPC™ - QuickSwitch Front Panel Controller** — Provides a discrete, backlit button for each input and output, allowing for simple, intuitive operation.
- **Tri-color, backlit buttons** — Can be custom labeled for easy identification. The buttons illuminate red, green, or amber, depending on function, for ease of use in low-light environments.
- **Front panel security lockout** — Prevents unauthorized use in non-secure environments. In lockout mode, a special button combination is required to operate the switcher from the front panel controller.
- **IP Link® Ethernet monitoring and control** — Engineered to meet the needs of professional A/V environments, IP Link enables the CrossPoint 450 Plus matrix switchers to be proactively monitored and managed over a LAN, WAN, or the Internet, using standard TCP/IP protocols. IP Link provides for remote selection of input and output ties, adjustment and control of audio input and output levels, and advanced system diagnostics.
- **IP Link enhanced diagnostics** — Provides for monitoring of internal product operating temperature and power supply voltages, e-mail notification of input signal loss, and other critical service information.
- **RS-232 and RS-422 serial control port** — Using serial commands, the CrossPoint 450 Plus Series can be controlled and configured via the included Windows-based control software, or integrated into third-party control systems. Extron products use the SIS™ - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The RS-232 and RS-422 port also makes it easy to install firmware updates.
- **Control software** — Provides a graphical, drag-and-drop interface for I/O configuration and other customization functions via RS-232 and RS-422 remote control. This software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may be saved for future downloading to the matrix switcher.

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Extron

CrossPoint 450 Plus Series

COMMON FEATURES (CONTINUED)

- **Optional control panels and keypads** — Provide the flexibility to control a CrossPoint 450 Plus Series matrix switcher from a remote location.
- **Rack-mountable metal enclosure** — All CrossPoint 450 Plus Series matrix switchers are housed in 19-inch wide metal enclosures.
- **Internal international power supply** — The 100-240VAC, 50/60 Hz, universal power supply provides worldwide power compatibility.

Optional MKP 3000 X-Y Control Panel

DESCRIPTION

The Extron **CrossPoint 450 Plus Series** Ultra-Wideband RGBHV matrix switchers are designed to meet or exceed the requirements of the most demanding high resolution computer-video and audio routing systems, where no compromise switching between sources is mandatory.

Available in twenty I/O sizes, from 8x4 to 64x64, the CrossPoint 450 Plus Series is the ideal solution for command and control operations, corporate and university CAD/graphics development centers, bio-medical imaging and training facilities, financial services, digital cinema projection, and other mission-critical system designs. The ultra-wideband performance of the CrossPoint 450 Plus Series also makes it the logical choice for maximizing system performance in demanding A/V system designs with multiple levels of signal processing.

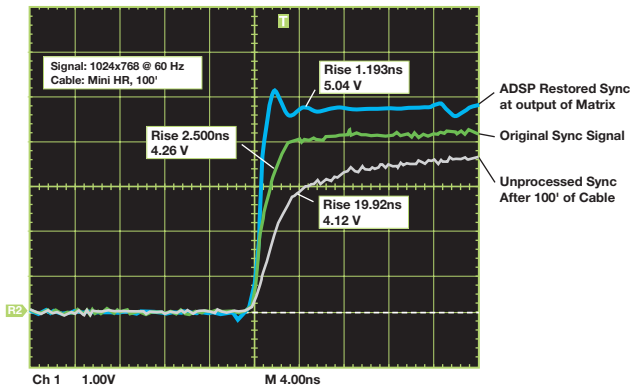
Video Features

The CrossPoint 450 Plus Series is engineered with a minimum of 450 MHz (-3 dB) RGB video bandwidth, fully loaded, when one input drives all outputs. Switcher performance is further enhanced by a remarkably flat response in the critical portion of bandwidth curve, between 0 and 130 MHz. This underscores the switcher's consistent performance, with minimal signal loss or gain, across the frequency spectrum. To ensure confidence and peace of mind in critical switching applications, all CrossPoint 450 Plus Series matrix switchers feature three exclusive Extron technologies: ADSP™ - Advanced Digital Sync Processing, DSVP™ - Digital Sync Validation Processing, and IP Link® Ethernet monitoring and control.

ADSP

Extron's ADSP is an all-digital process that corrects and restores the sync signal as it passes through the switcher. As shown below, sync voltage drops and the leading edge of the sync waveform rolls off when a standard, XGA resolution computer-video signal is passed through 100 feet (30 meters) of Mini High Resolution cable. ADSP technology in the CrossPoint 450 Plus Series restores sync to TTL levels, 5.0 V p-p, unterminated, ensuring that the projector or monitor accurately locks to sync and displays a stable image. Second, ADSP corrects the signal waveform to create sharp rising and falling edges, ensuring a more stable and reliable image in systems with different signal sources or cable lengths. Whether signal losses and distortion are caused by long cable runs, variations in display graphic card outputs, or low sync levels from many laptop computers, ADSP significantly reduces sync related problems, improving signal compatibility with many digital display devices.

ADSP Sync Signal Resolution



Leading Edge of Sync Pulse

For the best possible signal routing, Extron recommends the use of a computer-video interface with ADSP, such as the Extron RGB 109xi, with the CrossPoint 450 Plus Series. Interfaces with ADSP include additional circuitry that restores the original sync timing relationship and re-clocks the sync signal. This combination eliminates almost all projector synchronization problems caused by unstable sync. System designs that utilize ADSP throughout the sync path provide the optimum signal quality and reliability for all I/O combinations.

IP Link Ethernet Control

The CrossPoint 450 Plus Series is equipped with Extron's IP Link, an IP integration technology specifically engineered to meet the needs of professional A/V environments — from K-12 classrooms to large universities, businesses, and residential media systems.

IP Link is built around an integrated, high performance Web server that features global compatibility with industry standard Ethernet communication protocols, multi-user support, and GlobalViewer™ software. GlobalViewer, a Web-based application, enables a variety of asset management functions including proactive maintenance and remote technical support from any administrator authorized LAN, WAN, or Internet client.

On the CrossPoint 450 Plus Series, IP Link provides technical support personnel with the ability to receive service and failure messages through an e-mail-enabled cell phone, PDA, pager, or e-mail account. Utilizing IP Link, the help desk can also view embedded Web pages to manage, monitor, and troubleshoot the switcher for the following:

Asset Management

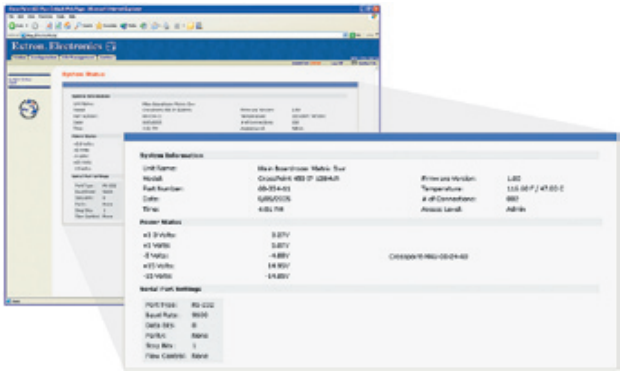
- Remotely select input and output ties for audio only, video only, or audio and video
- Name and select global I/O presets
- Set audio input and output volume levels
- Set RGB delay time for glitch-free transitions
- Upload firmware updates via the Internet

Operating Status and Diagnostics

- Monitor primary and redundant power supply voltages
- Monitor operating temperature
- Recall firmware revision and other data for improved Help Desk support
- Provides immediate notification via e-mail for loss of input signal, power supply failure, and other critical service information
- Upload firmware updates

DSVP

- Verify active sources by polling inputs for horizontal and vertical sync rate information



CrossPoint 450 Plus Internal Web Pages

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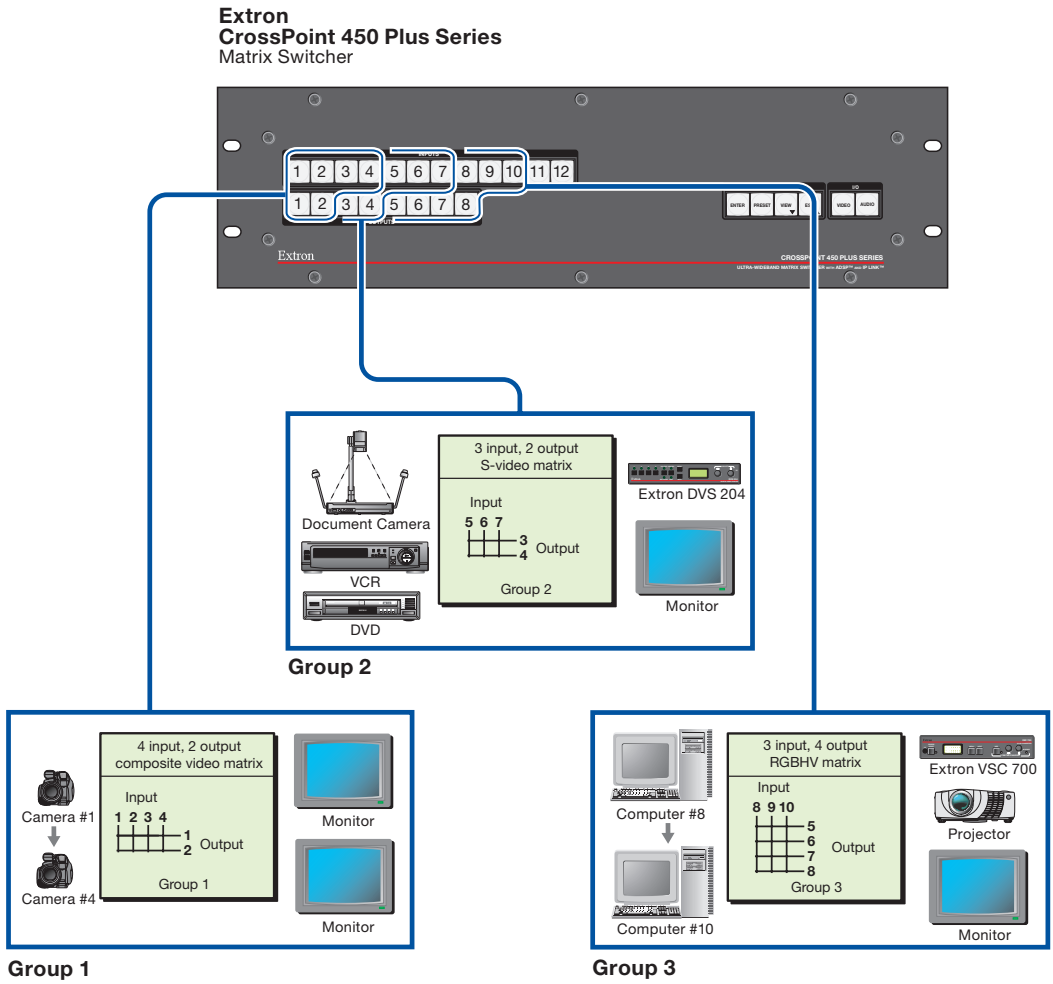

I/O Grouping

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Extron®

CrossPoint 450 Plus 84

8x4 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 3U, full rack width

CrossPoint 450 Plus 84 HVA

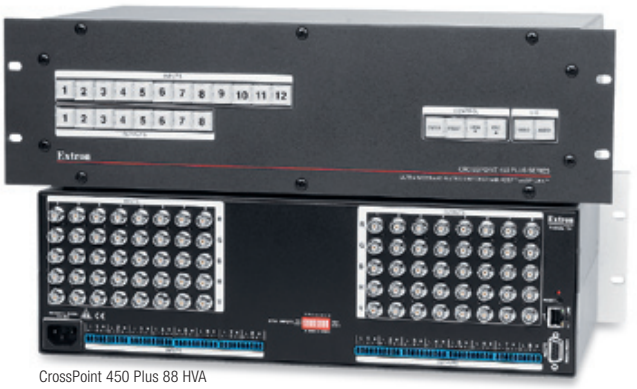
MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 84 HV	8x4 RGBHV	60-337-12
CrossPoint 450 Plus 84 HVA	8x4 RGBHV & Stereo Audio	60-337-11

CrossPoint 450 Plus 88

8x8 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 3U, full rack width



CrossPoint 450 Plus 88 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 88 HV	8x8 RGBHV	60-336-12
CrossPoint 450 Plus 88 HVA	8x8 RGBHV & Stereo Audio	60-336-11

CrossPoint 450 Plus 816

8x16 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 6U, full rack width

CrossPoint 450 Plus 816 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 816 HV	8x16 RGBHV	60-395-12
CrossPoint 450 Plus 816 HVA	8x16 RGBHV & Stereo Audio	60-395-11

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CrossPoint 450 Plus 124

12x4 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 3U, full rack width

CrossPoint 450 Plus 124 HVA

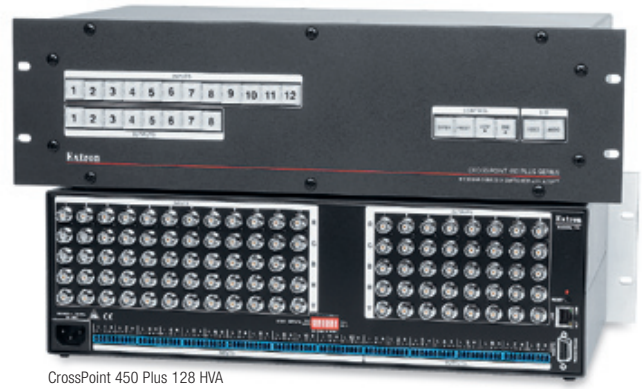
MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 124 HV	12x4 RGBHV	60-335-12
CrossPoint 450 Plus 124 HVA	12x4 RGBHV & Stereo Audio	60-335-11

CrossPoint 450 Plus 128

12x8 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 3U, full rack width



CrossPoint 450 Plus 128 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 128 HV	12x8 RGBHV	60-334-12
CrossPoint 450 Plus 128 HVA	12x8 RGBHV & Stereo Audio	60-334-11

CrossPoint 450 Plus 1212 NEW

12x12 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 6U, full rack width

CrossPoint 450 Plus 1212 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 1212 HV	12x12 RGBHV	60-852-12
CrossPoint 450 Plus 1212 HVA	12x12 RGBHV & Stereo Audio	60-852-11

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CrossPoint 450 Plus 168

16x8 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 6U, full rack width

CrossPoint 450 Plus 168 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 168 HV	16x8 RGBHV	60-333-12
CrossPoint 450 Plus 168 HVA	16x8 RGBHV & Stereo Audio	60-333-11

CrossPoint 450 Plus 1616

16x16 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 6U, full rack width

CrossPoint 450 Plus 1616 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 1616 HV	16x16 RGBHV	60-332-12
CrossPoint 450 Plus 1616 HVA	16x16 RGBHV & Stereo Audio	60-332-11

CrossPoint 450 Plus 2412

24x12 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 8U, full rack width
- Redundant power supplies

CrossPoint 450 Plus 2412 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 2412 HV	24x12 RGBHV	60-470-02
CrossPoint 450 Plus 2412 HVA	24x12 RGBHV & Stereo Audio	60-470-01

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CrossPoint 450 Plus 2424

24x24 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 10U, full rack width
- Redundant power supplies

CrossPoint 450 Plus 2424 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 2424 HV	24x24 RGBHV	60-468-02
CrossPoint 450 Plus 2424 HVA	24x24 RGBHV & Stereo Audio	60-468-01

CrossPoint 450 Plus 3216

32x16 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 8U, full rack width
- Redundant power supplies

CrossPoint 450 Plus 3216 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 3216 HV	32x16 RGBHV	60-471-02
CrossPoint 450 Plus 3216 HVA	32x16 RGBHV & Stereo Audio	60-471-01

CrossPoint 450 Plus 3232

32x32 Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- 10U, full rack width
- Redundant power supplies

CrossPoint 450 Plus 3232 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 3232 HV	32x32 RGBHV	60-469-02
CrossPoint 450 Plus 3232 HVA	32x32 RGBHV & Stereo Audio	60-469-01

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CrossPoint 450 Plus Extended Sizes

Ultra-Wideband Matrix Switchers with ADSP™ and IP Link® for RGB and Stereo Audio

UNIQUE FEATURES

- **30U, full rack width** - HV Models
- **37U, full rack width** - HVA Models
- **Redundant power supplies**

CrossPoint 450 Plus 6464 HV

CrossPoint 450 Plus 6464 HVA

MODEL	VERSION DESCRIPTION	PART #
CrossPoint 450 Plus 3248 HV	32x48 RGBHV	42-078-40
CrossPoint 450 Plus 3248 HVA	32x48 RGBHV & Stereo Audio	42-078-45
CrossPoint 450 Plus 3264 HV	32x64 RGBHV	42-079-40
CrossPoint 450 Plus 3264 HVA	32x64 RGBHV & Stereo Audio	42-079-45
CrossPoint 450 Plus 4832 HV	48x32 RGBHV	42-080-40
CrossPoint 450 Plus 4832 HVA	48x32 RGBHV & Stereo Audio	42-080-45
CrossPoint 450 Plus 4848 HV	48x48 RGBHV	42-081-40
CrossPoint 450 Plus 4848 HVA	48x48 RGBHV & Stereo Audio	42-081-45
CrossPoint 450 Plus 4864 HV	48x64 RGBHV	42-082-40
CrossPoint 450 Plus 4864 HVA	48x64 RGBHV & Stereo Audio	42-082-45
CrossPoint 450 Plus 6432 HV	64x32 RGBHV	42-083-40
CrossPoint 450 Plus 6432 HVA	64x32 RGBHV & Stereo Audio	42-083-45
CrossPoint 450 Plus 6448 HV	64x48 RGBHV	42-084-40
CrossPoint 450 Plus 6448 HVA	64x48 RGBHV & Stereo Audio	42-084-45
CrossPoint 450 Plus 6464 HV	64x64 RGBHV	42-085-40
CrossPoint 450 Plus 6464 HVA	64x64 RGBHV & Stereo Audio	42-085-45

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CROSSPOINT 450 PLUS 84 THOUGH 3232 SERIES SPECIFICATIONS

VIDEO

Routing

84 Series	8 x 4 matrix
88 Series	8 x 8 matrix
816 Series	8 x 16 matrix
124 Series	12 x 4 matrix
128 Series	12 x 8 matrix
1212 Series	12 x 12 matrix
168 Series	16 x 8 matrix
1616 Series	16 x 16 matrix
2412 Series	24 x 12 matrix
2424 Series	24 x 24 matrix
3216 Series	32 x 16 matrix
3232 Series	32 x 32 matrix
Gain	Unity
Bandwidth	450 MHz (-3 dB), fully loaded 0 - 10 MHz no more than +0.1 dB to -0.1 dB 0 - 130 MHz no more than +0.8 dB to -0.8 dB
Crosstalk	-80 dB @ 1 MHz, -55 dB @ 10 MHz, -45 dB @ 30 MHz, -37 dB @ 100 MHz
Switching speed	200 ns (max.)

VIDEO INPUT

Number / Signal type	8, 12, 16, 24, or 32 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video, S-video, composite video

Connectors

84/88/816 Series	8 x 5 BNC female
124/128/1212 Series	12 x 5 BNC female
168/1616 Series	16 x 5 BNC female
2412/2424 Series	24 x 5 BNC female
3216/3232 Series	32 x 5 BNC female
Nominal level	1 VP-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum / Maximum levels	Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance	75 ohms
Return loss	<-30 dB @ 5 MHz
DC offset (max. allowable)	1.5 V

VIDEO OUTPUT

Number / Signal type	4, 8, 12, 16, 24, or 32 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video, S-video, composite video

Connectors

84/124 Series	4 x 5 BNC female
88/128/168 Series	8 x 5 BNC female
1212/2412 Series	12 x 5 BNC female
816/1616/3216 Series	16 x 5 BNC female
2424 Series	24 x 5 BNC female
3232 Series	32 x 5 BNC female
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum / Maximum levels	0 V to 2.0 Vp-p (follows input)
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz
DC offset	±5 mV with input at 0 offset
Switching type	Triple-Action™

SYNC

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs (follows input)
Input level	0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level	AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance	Inputs 1 to 4: 75 or 510 ohms, switchable Inputs 5 to 8, 12, or 16: 510 ohms
Output impedance	75 ohms
Max input voltage	5.0 Vp-p
Max. propagation delay	<120 ns
Max. Rise / Fall time	4 ns
Polarity	Positive or negative (follows input)

AUDIO (AUDIO MODELS ONLY)

Routing

84 Series	8 x 4 stereo matrix
88 Series	8 x 8 stereo matrix
816 Series	8 x 16 stereo matrix
124 Series	12 x 4 stereo matrix
128 Series	12 x 8 stereo matrix
1212 Series	12 x 12 stereo matrix
168 Series	16 x 8 stereo matrix
1616 Series	16 x 16 stereo matrix
2412 Series	24 x 12 stereo matrix
2424 Series	24 x 24 stereo matrix
3216 Series	32 x 16 stereo matrix
3232 Series	32 x 32 stereo matrix
Gain	Unbalanced output: -6 dB; balanced output 0 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 1 kHz at nominal level
S/N	>90 dB, balanced, at maximum output (21 dBu), unweighted
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

AUDIO INPUT (AUDIO MODELS ONLY)

Number / Signal type	8, 12, 16, 24, or 32 stereo, balanced/unbalanced
Connectors	(8, 12, 16, 24, or 32) 3.5 mm captive screw connectors, 5 pole
Impedance	>10k ohm, balanced/unbalanced, DC coupled
Nominal level	0 dBu (775 mV)
Maximum level	+19.5 dBu, (balanced or unbalanced) at 0.01% THD+N
Input gain adjustment	-18 dB to +24 dB, adjustable per input by RS-232/422, Ethernet, or front panel

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT (AUDIO MODELS ONLY)

Number / Signal type	4, 8, 12, 16, 24, or 32 stereo, balanced/unbalanced
Connectors	(4, 8, 12, 16, 24, or 32) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or unbalanced at 0.10%THD+N
Maximum level (600 ohm)	>+15 dBm, balanced or unbalanced at 0.10%THD+N
Output volume range	0 to 64 (-75.8 dB to 0 dB) in 1 dB increments from steps 1 to 64, 12 dB increment from step 0 to 1, default = 64 = 0 dB

CONTROL / REMOTE – SWITCHER

Serial control port	
2412, 2424, 3216, 3232 Series	1 RS-232 or RS-422, rear panel 9-pin female D connector
All other models	1 bidirectional RS-232 or RS-422, rear panel 9-pin female D connector 1 bidirectional RS-232, front panel 2.5 mm mini stereo jack
Baud rate and protocol	9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
RS-232	9-pin female D connector: 2 = TX, 3 = RX, 5 = GND Mini stereo jack: tip = TX, ring = RX, sleeve = GND
RS-422	
88, 816, 1212, 168, 1616 Series	9-pin female D connector: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
All other models	9-pin female D connector: 1 = TX+, 2 = TX-, 3 = Rx+, 4 = RX-, 5 = GND
Ethernet control port (CrossPoint 450 Plus)	1 RJ-45 female connector
Ethernet data rate (CrossPoint 450 Plus)	10/100Base-T, half/full duplex with autodetect
Ethernet protocol (CrossPoint 450 Plus)	ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet

GENERAL

Power	
(24- and 32-input models)	2 power supplies (1 primary, 1 redundant), 100 VAC to 240 VAC, 50/60 Hz, internal, universal 2412/2424 Series: 150 watts 3216/3232 Series: 180 watts
Power (all other models)	100 VAC to 240 VAC, 50/60 Hz, internal, universal 84/88/124/128 Series: 30 watts 816/1212/168/1616 Series: 36 watts
Temperature / Humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes
Enclosure type	Metal
Enclosure dimensions	
84/88/124/128 Series	5.25" H x 17.0" W x 9.4" D (3U high, full rack wide) 13.3 cm H x 43.2 cm W x 23.9 cm D
816/1212/168/1616 Series	10.5" H x 17.0" W x 9.7" D (6U high, full rack wide) 26.7 cm H x 43.2 cm W x 24.6 cm D
2412/3216 Series	14.0" H x 17.0" W x 12.0" D (8U high, full rack wide) (35.5 cm H x 43.2 cm W x 30.5 cm D)
2424/3232 Series	17.5" H x 17.0" W x 12.0" D (10U high, full rack wide) (44.5 cm H x 43.2 cm W x 30.5 cm D) (Depth excludes connectors. Width excludes rack ears.)
Product weight	
84/88/124/128 Series	14.4 lbs (6.5 kg)
816/1212/168/1616 Series	19.4 lbs (8.8 kg)
2412/3216 Series	39.0 lbs (17.7 kg)
2424/3232 Series	42.0 lbs (19.1 kg)
Shipping weight	
84/88/124/128 Series	21 lbs (10 kg)
816/1212/168/1616 Series	26 lbs (12 kg)
2412/3216 Series	56 lbs (26 kg)
2424/3232 Series	60 lbs (28 kg)
DIM weight (International)	
84/88/124/128 Series	25 lbs (12 kg)
816/1212/168/1616 Series	34 lbs (15.5 kg)
2412/2424/3216/3232 Series	89 lbs (41 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%. Specifications are subject to change without notice.

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Extron®

CROSSPOINT 450 PLUS EXTENDED SIZES SPECIFICATIONS

VIDEO

Routing ..... 64 x 64, 64 x 48, 64 x 32, 48 x 64, 48 x 48, 48 x 32, 32 x 48, or 32 x 64 matrix
Gain ..... Unity
Bandwidth ..... 450 MHz (-3 dB), fully loaded
0 - 10 MHz: no more than +0.1 dB to -0.1 dB
0 - 130 MHz: no more than +1.0 dB to -1.0 dB
Crosstalk ..... -80 dB @ 1 MHz, -62 dB @ 10 MHz, -52 dB @ 30 MHz
Switching speed ..... 200 ns (max.)

VIDEO INPUT

Number / Signal type ..... 32, 48, or 64 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video
Connectors ..... 32, 48, or 64 BNC female
Nominal level ..... 1 Vp-p for Y of component video and S-video, and for composite video
0.7 Vp-p for RGB and for R-Y and B-Y of component video
0.3 Vp-p for C of S-video
Minimum / Maximum levels ... Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance ..... 75 ohms
Horizontal frequency ..... 15 kHz to 150 kHz
Vertical frequency ..... 30 Hz to 150 Hz
Return loss ..... -30 dB @ 5 MHz
DC offset (max. allowable) ..... 1.5 V

VIDEO OUTPUT

Number / Signal type ..... 32, 48, or 64 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video
Connectors ..... 32, 48, or 64 BNC female
Nominal level ..... 1 Vp-p for Y of component video and S-video, and for composite video
0.7 Vp-p for RGB and for R-Y and B-Y of component video
0.3 Vp-p for C of S-video
Minimum / Maximum levels ... 0 V to 2.0 Vp-p (follows input)
Impedance ..... 75 ohms
Return loss ..... -30 dB @ 5 MHz
DC offset ..... ±5 mV with input at 0 offset
Switching type ..... Triple-Action™

SYNC

Input type ..... RGBHV, RGBS, RGsB, RsGsBs
Output type ..... RGBHV, RGBS, RGsB, RsGsBs (follows input)
Input level ..... 0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level ..... AGC to TTL: 4.0 V to 5.0 Vp-p, unterminated
Input impedance ..... Inputs 1 to 16: 75 or 510 ohms, switchable
Inputs 17 to 32, 48, or 64: 510 ohms
Output impedance ..... 75 ohms
Max. propagation delay ..... 30 ns
Max. Rise / Fall time ..... 4 ns
Polarity ..... Positive or negative (follows input)

AUDIO

SEE MAV PLUS SERIES AUDIO SPECIFICATIONS, PAGE 307

AUDIO INPUT

SEE MAV PLUS SERIES AUDIO SPECIFICATIONS, PAGE 307

AUDIO OUTPUT

SEE MAV PLUS SERIES AUDIO SPECIFICATIONS, PAGE 307

CONTROL / REMOTE – SWITCHER

Serial control port ..... 1 RS-232 or RS-422, 9-pin female D connector
Baud rate and protocol
9-pin D connector ..... 9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
2.5 mm phone jack ..... 9600 baud; 8 data bits, 1 stop bit, no parity
Serial control pin configurations
9-pin D connector ..... RS-232: 2 = TX, 3 = RX, 5 = GND
RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
2.5 mm phone jack ..... Tip = TX, ring = Rx, sleeve = GND
Ethernet control port ..... 1 RJ-45 female connector
Ethernet data rate ..... 10/100Base-T, half/full duplex with autodetect
Ethernet protocol ..... ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP
Program control ..... Extron's control/configuration program for Windows®
Extron's Simple Instruction Set (SIS™)
Microsoft® Internet Explorer, Telnet

GENERAL

Power ..... 100 VAC to 240 VAC, 50/60 Hz, internal, universal, primary and redundant
(64 or 48) x (32, 48, or 64) wideband: 110 watts at 115 VAC, 60 Hz
32 x (48 or 64) wideband: 50 watts at 115 VAC, 60 Hz
(64 x 64) sync: 65 watts at 115 VAC, 60 Hz

NOTE: A redundant power supply is standard.

Temperature / Humidity ..... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount ..... Yes, with included parts
Enclosure type ..... Metal
Enclosure dimensions
Video BMEs ..... 10.5" H x 17.0" W x 14.1" D (6U high, full rack wide)
26.7 cm H x 43.2 cm W x 35.8 cm D
Audio BMEs ..... 12.25" H x 17.0" W x 14.1" D (7U high, full rack wide)
31.1 cm H x 43.2 cm W x 35.8 cm D
Product weight per BME
32 x 48 through 64 x 64 Series wideband video BMEs ..... 18.0 lbs (8.2 kg)
32 x 48 through 64 x 64 Series sync BMEs ..... 17.0 lbs (7.7 kg)
Shipping weight per BME
32 x 48 through 64 x 64 Series wideband video BMEs ..... 30 lbs (14 kg)
32 x 48 through 64 x 64 Series sync BMEs ..... 29 lbs (13 kg)
DIM weight per BME
(International) ..... 44 lbs (20 kg)

NOTE: An RGBHV system will be shipped as 5 BMEs in 5 cartons.

Vibration ..... ISTA 1A in carton (International Safe Transit Association)
Listings ..... UL, CUL
Compliances ..... CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF ..... 30,000 hours
Warranty ..... 3 years parts and labor

NOTE: All nominal levels are at ±10%. Specifications are subject to change without notice.

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